

(No Model.)

2 Sheets—Sheet 1.

M. ARNOLD.
RIVETING MACHINE.

No. 454,199.

Patented June 16, 1891.

Fig. 1.

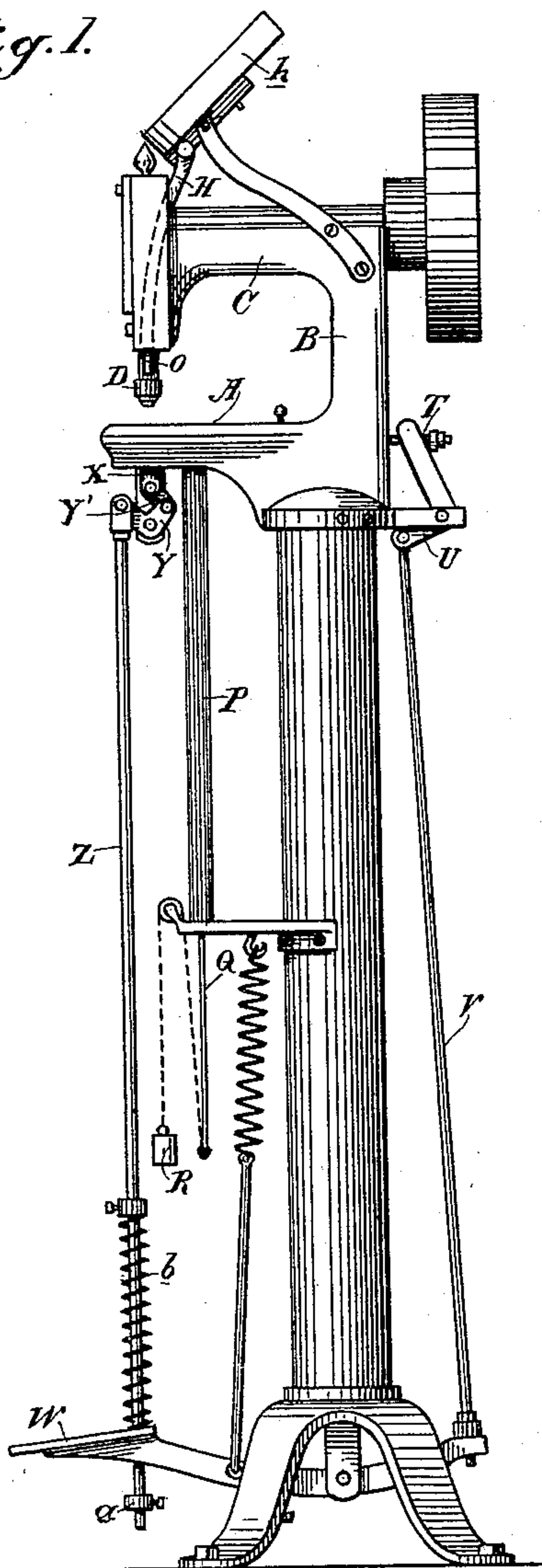
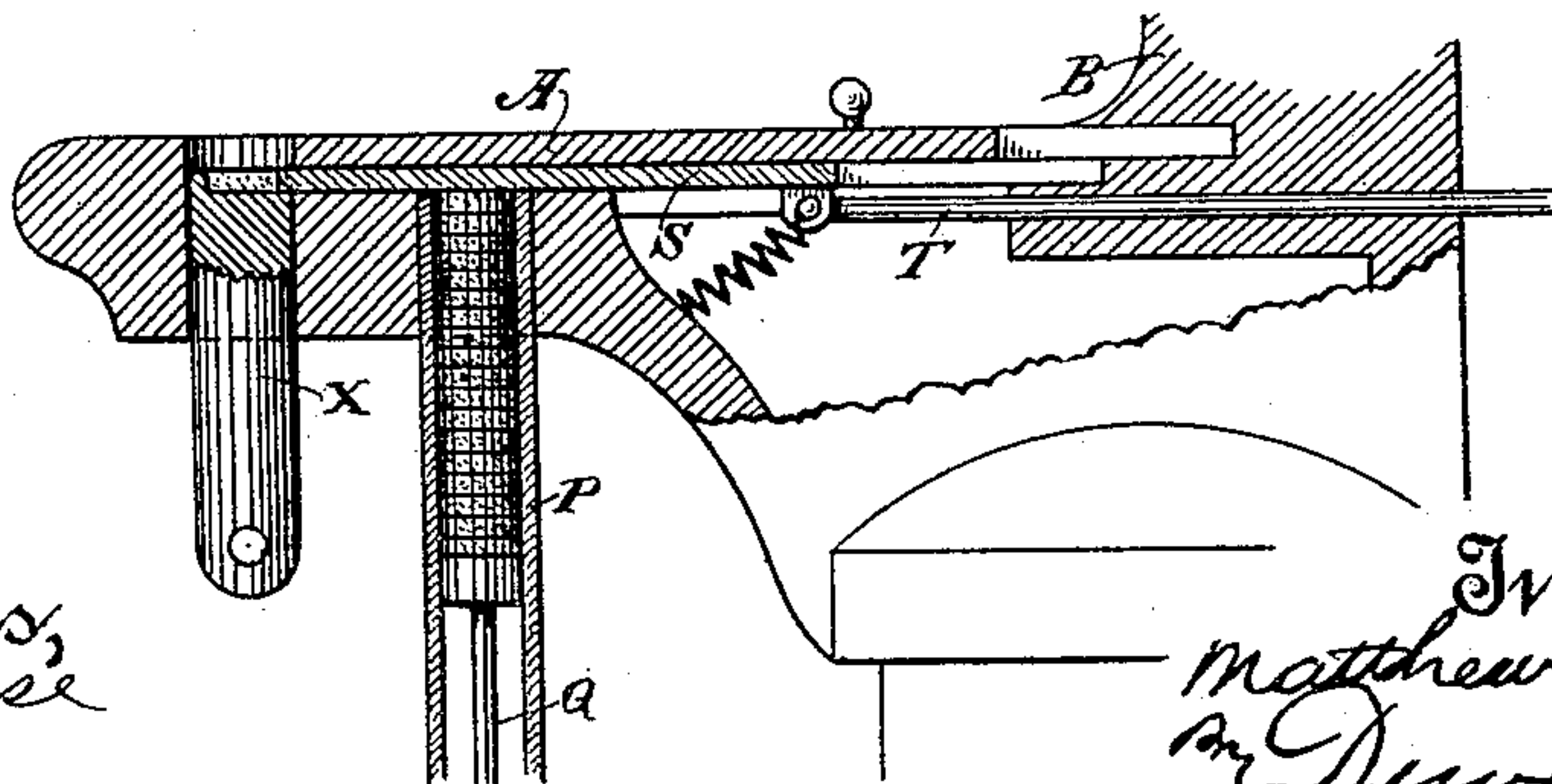


Fig. 2.



Witnesses,
J. H. Hulse
H. C. Lee.

Inventor,
Matthew Arnold
By Duwey & Co.
attys

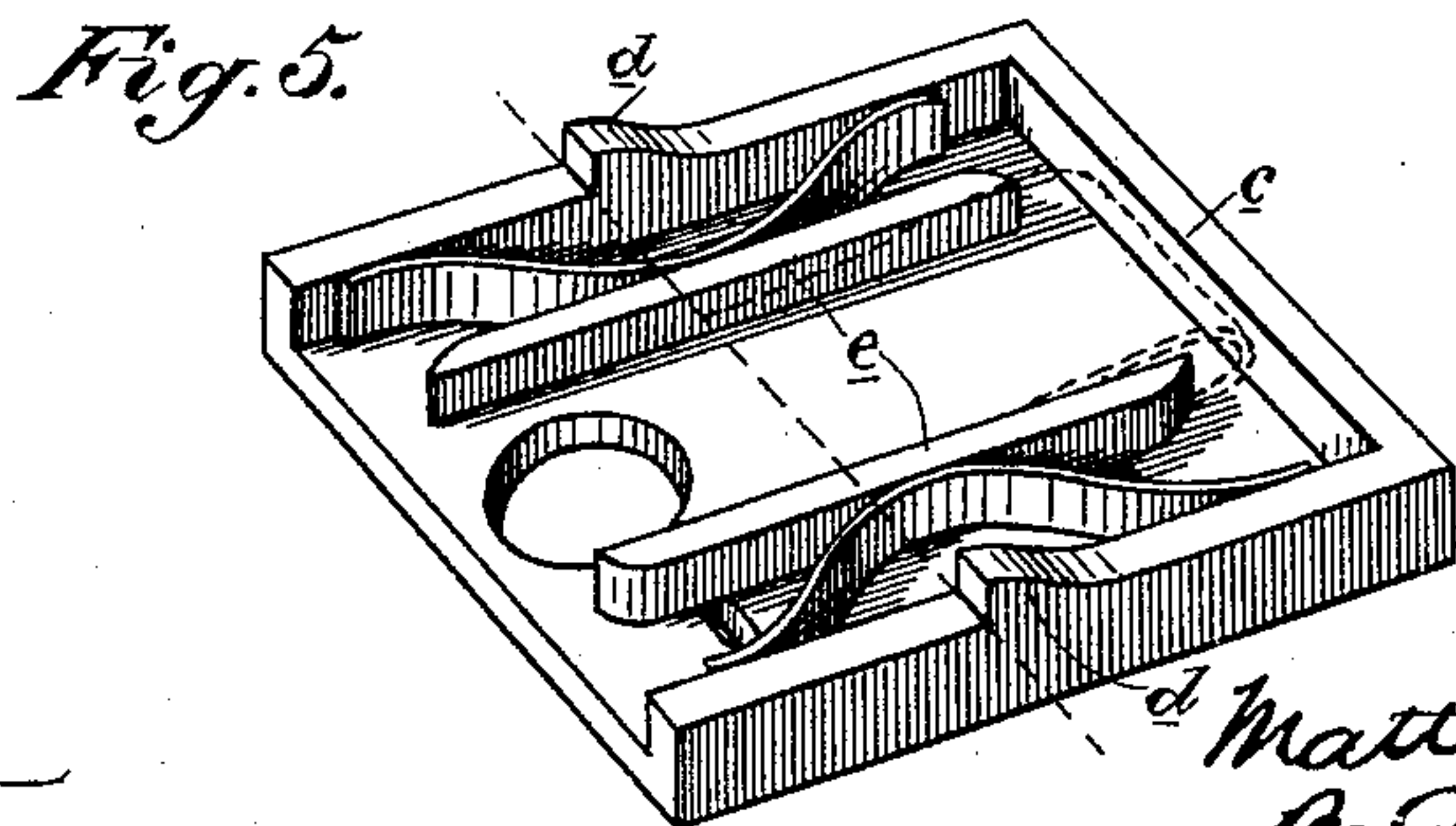
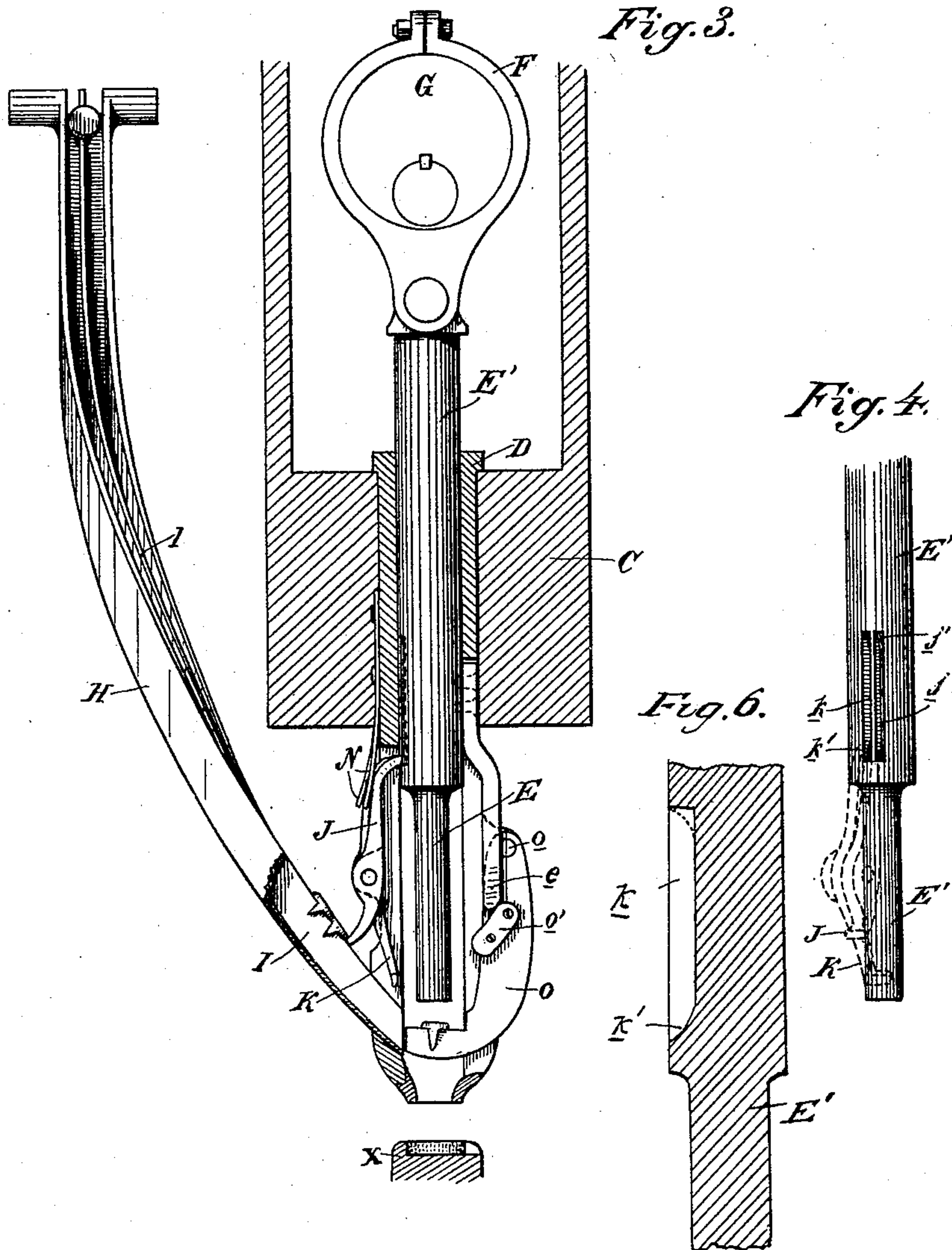
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2 Sheets—Sheet 2.

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RIVETING MACHINE.

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Witnesses,
J. H. H. H.
H. C. Lee.

Inventor,
Matthew Arnold
McDewy & Co.
attys

UNITED STATES PATENT OFFICE.

MATTHEW ARNOLD, OF SAN FRANCISCO, CALIFORNIA.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 454,199, dated June 16, 1891.

Application filed August 7, 1890. Serial No. 361,376. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW ARNOLD, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Riveting-Machines; and I hereby declare the following to be a full, clear, and exact description of the same:

My invention relates to certain improvements in riveting-machines; and it consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view of my machine. Fig. 2 is a detail view of the plunger and its attachment. Fig. 3 is an enlarged detail showing the plunger, its actuating mechanism, the stop-levers, swinging levers, and chute. Fig. 4 shows the grooves on the plunger. Fig. 5 is a view of the frame used for boot-legs. Fig. 6 is an enlarged sectional view showing one of the grooves in the shank E'.

My present invention is an improvement upon a device for which Letters Patent No. 371,659 were issued to me October 18, 1887.

In my present device, A is the bed or table, having an arm or standard B arising from it, in the upper horizontal part C of which is housed and journaled the drive-shaft with its belt-pulley on the outside. The inner end of said shaft carries an eccentric G, and to this is connected by the strap F the punch-shank E' of the punch E. To the inner part of casing C is fixed a sleeve D to guide the punch in its movement and also to serve as a support for the stop-levers J and K. These levers are fulcrumed side by side, as shown in Fig. 4, and the length of their lower arms is such that the lower arm of the lever J rests against the central rib I of a feed-chute H a short distance above the corresponding arm of the lever K, as shown in Fig. 3, so as to form a space between the points of the two levers. This chute H is connected at its top to a feed or supply box h, with a central rib I, down over which the rivets (which have a closed top and two or more legs) ride astride to be finally delivered in the same position over the upper edge of a swinging lever O. This lever is also pivoted to the sleeve D at o and carries on one side a projecting lug o'.

A downwardly-extending arm e is fixed to the shank E' to come in contact with this lug o'. The lower end of the lever o, which receives the rivet, is bent to stand directly over the conically-shaped bushing of the sleeve D, so that its withdrawal will cause the rivet to drop straight down into the bushing. The upper arms of the stop-levers J and K rest in two vertical grooves j and k, formed on the shank E', and are kept in place by springs N on the sleeve D. The bottom of groove j inclines outwardly in its upper end, forming an outwardly-inclined plane j', while the groove k is of the same construction in its lower portion, as shown at k' in Fig. 6.

The operation of these parts is as follows: In its normal position the punch is drawn upward to its limit. The upper arms of the stop-levers rest in the lower ends of their grooves, which by their construction cause the lever J to close onto the rib I and arrest the rivets, while lever K, with its upper arm forced outwardly by the incline k', has opened the passage on the rib I and let its rivet drop on the lever O, where it still remains, as shown in Fig. 3. The first movement now is the descending of the plunger. This action brings the arm e down, and by coming in contact with lug o' forces the lever O outward through a slot in sleeve D and leaves the rivet to drop down into the flaring passage in the bushing. In the meantime the upper arm of lever K has reached the normal bottom of its groove again, and thereby its lower arm closes the passages on rib I, and when the plunger has arrived at its lowest limit and forced the rivet through the material (the latter having been brought upward and against it by the movable plunger X, hereinafter described) the upper arms of the stop-levers have also reached the upper ends of their grooves j k, and the upper arm of lever J is now forced outward by incline j', and the lower arm opens the passage, allowing one rivet to pass down to lever K. When the plunger again ascends, the point of the lever J is allowed to press upon the rib I and stop the rivets which are above it. By the same movement the lever O becomes free, and either by gravity or the aid of a spring resumes its place above the bushing, and when the plunger has arrived

at its starting-point again the lever K has also delivered its retained rivet on the lever O again by reason of having been moved by the incline k' in the slotted shank E' , and so the parts are again ready for the repetition of the action.

When it is desired to employ washers in connection with this device, the washers are contained in a tube P, the upper end of which opens just beneath the surface of the table A, and in the lower end is a plunger having a rod Q, which may be acted upon by a spring or by a weight, as shown at R, which constantly forces it upward and keeps the washers raised at the upper end of the tube.

A slide S is actuated by a pitman T, which is in turn operated by a bell-crank lever U, a rod V, and a treadle W, so that when this treadle is pressed downward it will draw the slide S backward behind the upper end of the tube P and will allow a washer from the tube P to rise in front of the slide. When the slide is returned, it carries the washer horizontally into the space directly beneath the punch E and in the upper end of a vertically-moving plunger X. This plunger is actuated by a bell-crank lever Y, a rod Z, which extends downwardly through the treadle W and has a collar upon it, as shown at a , and a spring b , so that the upward movement of the plunger X, although produced by the movement of the treadle W, will be delayed until the slide S has carried a washer forward and deposited it above the plunger X and has then been withdrawn, so as to be out of the way of the plunger X. The treadle then engages the collar a upon the rod Z, and through the bell-crank lever Y and the connecting-link Y' the plunger X is forced upward to meet the plunger E, which is simultaneously forcing a rivet downward, and the washer will thus be forced upon the point of the rivet before the points of the latter are turned, so as to clinch them in the material which is being riveted. When these rivets are being employed for fastenings for belts, the washers will not be needed; but for cloth or some substances which are not strong enough to properly hold the rivets the washer may be applied upon the under side, so as to make a stronger fastening.

This device may be used for securing the straps upon the unfinished sides of boot-legs, and when thus used I employ a frame c , having the shoulders d , which act as stops against which the upper end of the leather of the leg is arrested. The material of the straps, properly folded, is held between the spring-actuated clamps e until the rivet is forced through the leather, so as to secure it upon the boot-leg.

As many rivets may be employed for securing the strap upon the boot-leg as may be desired, and by reason of the guides e and the end of the frame c , which serves as a stop for the upper end of the strap, and the stops d for the upper edge of the boot-leg it will

be manifest that these straps may be rapidly and accurately secured.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In riveting-machines, the inclined chute having the central rib upon which the rivets are received and retained in their proper position and a vertically-moving guide and plunger by which the rivets are forced downward into the material beneath, in combination with the stops J and K, situated one above the other, the lower arm of one of said stops resting against the central rib of the chute above the corresponding arm of the other stop, and a means comprising the grooved plunger or punch for moving said stops alternately, so that the rivets are arrested by the first stop and allowed to move successively from the first to the second stop and from the second stop to the hook or support beneath the plunger, substantially as herein described.

2. In riveting-machines, the inclined rivet-guiding rib and chute and the pivoted stops J and K, adapted to arrest the rivets at points one above the other in the chute, in combination with the vertically-reciprocating plunger or punch and the shank, the grooves or channels into which the upper ends of the stop-levers are received, and the inclines at opposite ends of the grooves or channels which act to raise the stops successively at the end of the upward and downward movements of the punch, substantially as herein described.

3. In riveting-machines, the downwardly-moving riveting-punch reciprocating in a guide above the table and the upwardly-moving anvil reciprocating in opposition thereto from beneath the table, a horizontally-moving slide, a lever whereby it is reciprocated, a washer-containing tube with a plunger, and a weight connected with the stem of the plunger, whereby the washers are forced upwardly in said tube, so that the reciprocating slide will transfer a single washer from the tube to the upwardly-moving anvil at each reciprocation, substantially as herein described.

4. In riveting-machines, the reciprocating riveting-punch and anvil, a guiding-chute for rivets, and stops acting with relation to each other, so as to deliver rivets successively beneath the punch, in combination with a frame having shoulders or stops d and spring-actuated clamps e , whereby straps are held while the rivets are inserted, substantially as herein described.

5. In riveting-machines, the inclined rivet-guiding rib and chute, the stops J and K, pivoted side by side and adapted to arrest the rivets at points one above the other in the chute, and mechanism comprising the grooved plunger or punch having inclines at the ends of the grooves for moving said stops alternately, so that the rivets successively pass the first and second stops, in combination with the oscillating hook O, upon which the rivets are re-

ceived and from which they are delivered beneath the punch, substantially as herein described.

6. In riveting-machines, the inclined rivet-guiding rib and chute, the stops pivoted side by side and adapted to arrest the rivets at points one above the other in the chute, and mechanism comprising the grooved plunger or punch having inclines at the ends of the grooves for moving said stops alternately, so that the rivets successively pass the first and

second stops, in combination with the oscillating hook O, upon which the rivets are received, the cam o', and the reciprocating arm e, substantially as herein described.

In witness whereof I have hereunto set my hand.

MATTHEW ARNOLD.

Witnesses:

LINCOLN SONNTAG,
S. H. NOURSE.